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PHILOSOPHICAL TRANSACTIONS.

- I. *An Account of the Sun's Distance from the Earth, deduced from Mr. Short's Observations relating to the horizontal Parallax of the Sun: In a Letter from Peter Daval, Esq; V.P. of R. S. to James Barrow, Esq; V.P. of R. S.*

Read Jan. 13,
1763.

ACCORDING to Mr. Short, the mean horizontal parallax of the Sun is $8''$, 65 .

Now this parallax is the angle, which the semidiameter of the earth subtends, being seen from the Sun.

Therefore as $8''$, 65 , is to 360° (the whole periphery of a circle) so is the semidiameter of the earth to the periphery of the orbit of the earth round the

Sun. But $8''$, 65, is very nearly $\frac{1}{149826}$ th part of 360° , as may be easily proved by division.

According to the latest observations, the mean semidiameter of the earth is 3958 English miles, which being multiplied by 149,826 produces 593,011,308 miles for the circumference of the orbit of the earth.

The distance of the earth from the Sun is the semidiameter of this orbit: and the periphery of the circle is to it's semidiameter very nearly as 6,283,185 to one.

Therefore if we divide 593,011,308 by 6,283,185 the quotient, which is very nearly 94,380,685, will give the mean distance of the earth from the Sun in English miles.

N. B. As the orbit of the earth is an ellipsis, not a circle, the distance of the earth from the Sun will be greater in it's aphelion, and less in it's perihelion, than here assigned.

Dear Sir,

I have from Mr. Short's observations deduced, as above, the mean distance of the Sun from the earth, and am pretty sure I have made no material mistake.

I am

Your's entirely,

Dec. 18, 1762.

Peter Daval.